November 18, 2008

"A different way of evaluating the economic impact and options regarding Waste-to-Energy and Solid Waste Management."

BOCC Mission Statement

“To preserve and enhance the quality of life for all citizens by ensuring optimum services, open government, and creative use of community resources.”

Questions before the BOCC:

What is the most responsible strategy for managing Frederick County's solid waste?

What is the optimal process for making that determination?

Where we are today:

Should the BOCC approve, finance, build and operate a 1,500 tons per day, regional (two-county) "Waste to Energy" incinerator in Frederick County?

And, before that, are there other alternatives that the BOCC should more fully evaluate?

(Very) Basic Background

Frederick County receives 600 - 800 tons of trash five days a week at our landfill on Reichs Ford Road, with an additional 200 to 300 tons received on Saturdays.

County government is responsible for the disposal of our solid waste in a manner that protects public health, is cost efficient, and minimizes environmental impacts.

Frederick County owns and operates a landfill, provides curbside recycling in much of the county and 12 drop-off recycling centers, grass and yard waste composting, drop-off e-waste and textile recycling and a few other related services such as tires, batteries, and hazardous waste days. A new transfer station is scheduled to open shortly, which will expand our recycling options and services.

Frederick County has limited remaining landfill space. If all our community's waste was placed in the landfill, the capacity of the landfill would be fully exhausted within a few years. To preserve our landfill capacity, the county is working to improve recycling and diversion rates, and transferring and shipping the majority of our solid waste to a mega-landfill in Virginia.

For a while, the primary focus of county efforts has been the consideration of a "Waste to Energy" incinerator, with enhanced recycling efforts.

Most of the documents (staff reports, the Beck report, etc.), presentations, and, since mid-2007, the various BOCC worksessions and hearings are available on the county website:

http://www.co.frederick.md.us/

Key points included in this Presentation

1) A brief overview and perspective about the process to date.
2) A matter of urgency?
3) Waste to Energy or a new landfill?
4) Is Waste to Energy the best economic choice for Frederick County?
5) Consideration of an alternative from an economic perspective.
6) Other real and potential risks and benefits of both scenarios.
7) The value and benefits of a more flexible and adaptable system
8) The ethics of shipping a portion of our waste out of the county.
9) Summary

What this Presentation is NOT

1) It does not offer a specific, highly detailed "ready-to-go" alternative proposal.

2) It does not include a review of the important public health and environmental concerns about Waste to Energy.

There have been many and serious concerns raised about both the public health and environmental impacts associated with a Waste-to-Energy incinerator. There are real and significant public health and environmental issues that have not been adequately addressed or resolved.

In no way is the absence of those issues here a reflection of lesser importance. But the focus here is on some basic economic issues, questions and concerns.

The process to date:

There has been considerable discussion and documentation about the county's process to date regarding our solid waste issue, in general, and our consideration of Waste-to-Energy, in particular. The following is a very cursory list of a few of the highlights most commonly described and referred to:

- Previous BOCC initiated the process, including the Beck Report
- R.W. Beck Report
- Staff research
- Visits to Montgomery County WTE facility
- Trips by some BOCC members to Europe, Seattle and Boulder
- July 2007 Solid Waste Forum
- Independent research by individual BOCC members
- Various BOCC meetings, worksessions and hearings.

The process to date (continued)

Among other things, the process to date has not included:

• A comprehensive, professional **Risk Assessment** of WTE that embraces accepted best practices

• A professional **review of multiple alternatives** to Waste to Energy.

Note: In fact, throughout the entire process, not a single outside expert or consultant or forum participant has been part of the official county information-gathering and decision-making (on the county's time or dime) who has either been opposed to WTE incineration or has been actively supporting any alternative that does not include WTE. Not one.

Question: Would any private business make this level of investment, with the decades-long commitment that comes with it, based on the information the county has gathered and considered to date?

The process to date (continued)

Attachment: Excerpt (Scope of Work and beginning of Summary) from "Solid Waste Management Options" prepared by R.W. Beck (September 2005)

Attachment: Two related solid waste chronologies

Attachment: Excerpt from the "GAOs Basic Characteristics of Credible Cost Estimates" http://www.gao.gov/new.items/d071134sp.pdf

A matter of urgency?

Is our diminishing landfill capacity creating an atmosphere of crisis and leading to a rush to judgment?

We often hear that our "landfill will be full in six years."

And we know it takes approximately ten years to site, purchase, permit, design and construct a new landfill (Beck), and at least six years to site, approve, negotiate, permit, finance and construct a new mass burn, Waste to Energy facility.

Question: Is it really necessary or in our economic interest to move forward with a Waste-to-Energy incinerator before performing a comprehensive, professional Risk Assessment of WTE that embraces accepted best practices or engaging a professional review of other, specific alternatives to Waste to Energy?

Waste-to-Energy or a new landfill?

Recently, we have increasingly heard that our only real choice is between siting and constructing a Waste to Energy facility or siting and establishing a new landfill – that opposing an “incinerator” is tantamount to supporting a new landfill.

This presentation offers a broader range of options.

“Plug and Play”

A different approach to evaluating and comparing the costs and risks of WTE and alternatives

Despite disagreement about the adequacy of what the county has done (and not done) to date, about what we know, don’t know, and ought to know in order to make a responsible, long term decision (that could cost hundreds of millions of dollars and lock the county into one approach for decades); and despite disagreement about whether or not it is in the county’s interest to more thoroughly evaluate certain options that have not been fully considered; it is clear that **significant assumptions have been made about many elements and variables of those few options we have examined and compared more closely, such as long distance hauling and waste-to-energy**.

For the last year, I have been very concerned about the accuracy, or more to the point, the certainty, of many of the assumptions at the foundation of the options and models we have compared; not to mention the risks and potential costs the county faces if certain assumptions are off the mark by varying degrees.

The approach herein is designed to serve as a starting point of a broader discussion to follow. **A key goal is to encourage the development and use of a more sophisticated and detailed version of the process used to make the basic comparison below.** In the simplest terms, the idea is to be able to “plug” a wide variety of individual and distinct possibilities or assumptions (choices) into a complicated situation that includes many important elements and variables, significant assumptions, substantial uncertainties, and a broad array of options.

This is not a comprehensive financial modeling, but rather an initial and exemplary analysis, based on known information and conservative assumptions, to evaluate the widely-perceived and broadly supported need for a more comprehensive analysis of a solid waste management program that does not require a WTE component or, in the near term, a newly sited local landfill.

This report makes a number of choices, using specific values or ranges. All of those choices - as well as the inclusion of other variables - should be subjected to considerable scrutiny and discussion during the development of a better and more comprehensive financial model.

The idea – no matter what numbers, values, assumptions or ranges may be more correct or certain or risky, and, ultimately, may provide a sufficient basis for making major decisions about how the county should proceed – is that we (the county) should be able to evaluate their costs, and risks, and more adequately see the short and long term outcomes that may or would result.

(a graphic representation)

SWMComp

Using MDP Population Projections @ 1.57 Tons per Capita

RRBP Diversion Rate	RRBP Diverted	RRBP Landfill	Transport Tons	RRBP Costs RRBP Debt	ations	RRBP Transport Cost	Revenue	RRBP Net Costs	Cumulative Costs	WTE Diversion Rate	WTE Diverted	WTE Landfill	Transport Tons	WTE Costs WTE Debt	WTE Operations	WTE Transport Cost	WTE Revenue	WTE Net Costs	Cumulative Costs	WTE vs. RRBP (Net)	RRBP vs. WTE (Cumulative)
40.00%	150,541	18,250	207,562		0	20,756,153	0	20,756,153	20,756,153	40.00%	150,541	18250	207,562			20,756,153		20,756,153	20,756,153	0	0
40.00%	154,029	18,250	212,794	3,273,898	0	21,279,378	0	24,553,276	45,309,429	41.33%	159,151	18250	207,672			20,767,231		20,767,231	41,523,384	3,786,045	3,786,045
43.00%	168,459	18,250	205,057	3,273,898	0	20,505,661	0	23,779,558	69,088,987	42.66%	167,127	18250	206,389			20,638,861		20,638,861	62,162,245	3,140,697	6,926,742
46.00%	183,291	18,250	196,918	3,273,898	0	19,691,785	0	22,965,682	92,054,670	43.99%	175,282	18250	204,927			20,492,687		20,492,687	82,654,933	2,472,995	9,399,737
49.00%	198,524	18,250	188,378	3,273,898	0	18,837,751	0	22,111,649	114,166,318	45.32%	183,615	18250	203,287			20,328,710		20,328,710	102,983,643	1,782,938	11,182,675
52.00%	214,159	18,250	179,436	3,273,898	0	17,943,559	0	21,217,457	135,383,775	46.65%	192,126	18250	201,469			20,146,930		20,146,930	123,130,573	1,070,527	12,253,202
55.00%	230,196	36,500	151,842	3,273,898	0	15,184,209	0	18,458,107	153,841,882	47.98%	200,815			15,878,403	15,389,327		11,112,406	20,155,324	143,285,897	-1,697,217	10,555,985
58.00%	246,634	36,500	142,097	3,273,898	0	14,209,702	0	17,483,599	171,325,481	49.31%	209,681			15,878,403	15,389,327		11,112,406	20,155,324	163,441,221	-2,671,725	7,884,260
61.00%	263,474	36,500	131,950	3,273,898	0	13,195,036	0	16,468,933	187,794,414	50.64%	218,726			15,878,403	15,389,327		11,112,406	20,155,324	183,596,546	-3,686,391	4,197,869
64.00%	280,715	36,500	121,402	3,273,898	0	12,140,212	0	15,414,109	203,208,524	51.97%	227,949			15,878,403	15,389,327		11,112,406	20,155,324	203,751,870	-4,741,215	-543,346
67.00%	298,358	36,500	110,452	3,273,898	0	11,045,230	0	14,319,127	217,527,651	53.30%	237,350			15,878,403	15,389,327		11,112,406	20,155,324	223,907,194	-5,836,197	-6,379,543
70.00%	316,402	36,500	99,101	3,273,898	0	9,910,090	0	13,183,988	230,711,639	54.63%	246,929			15,878,403	15,389,327		11,112,406	20,155,324	244,062,518	-6,971,337	-13,350,879
71.00%	326,696	36,500	96,939	3,273,898	0	9,693,932	0	12,967,830	243,679,469	55.96%	257,492			15,878,403	15,389,327		11,112,406	20,155,324	264,217,842	-7,187,494	-20,538,373
72.00%	337,153	36,500	94,615	3,273,898	0	9,461,510	0	12,735,407	256,414,876	57.29%	268,271			15,878,403	15,389,327		11,112,406	20,155,324	284,373,166	-7,419,917	-27,958,290
73.00%	347,773	36,500	92,128	3,273,898	0	9,212,822	0	12,486,719	268,901,595	58.62%	279,266			15,878,403	15,389,327		11,112,406	20,155,324	304,528,491	-7,668,605	-35,626,895
74.00%	358,555	36,500	89,479	3,273,898	0	8,947,868	0	12,221,766	281,123,361	60.00%	290,720			15,878,403	15,389,327		11,112,406	20,155,324	324,683,815	-7,933,558	-43,560,454
75.00%	369,500	36,500	86,667	3,273,898	0	8,666,650	0	11,940,548	293,063,909	60.00%	295,600			15,878,403	15,389,327		11,112,406	20,155,324	344,839,139	-8,214,777	-51,775,230
76.00%	380,607	36,500	83,692	3,273,898	0	8,369,166	0	11,643,064	304,706,972	60.00%	300,479			15,878,403	15,389,327		11,112,406	20,155,324	364,994,463	-8,512,260	-60,287,490
77.00%	391,877	36,500	80,554	3,273,898	0	8,055,418	0	11,329,315	316,036,288	60.00%	305,359			15,878,403	15,389,327		11,112,406	20,155,324	385,149,787	-8,826,009	-69,113,499
78.00%	403,310	36,500	77,254	3,273,898	0	7,725,404	0	10,999,301	327,035,589	60.00%	310,238			15,878,403	15,389,327		11,112,406	20,155,324	405,305,111	-9,156,023	-78,269,522
79.00%	414,905	36,500	73,791	3,273,898	0	7,379,124	0	10,653,022	337,688,611	60.00%	315,118			15,878,403	15,389,327		11,112,406	20,155,324	425,460,435	-9,502,302	-87,771,825
80.00%	426,663	36,500	70,166		0	7,016,580	0	7,016,580	344,705,191	60.00%	319,997			15,878,403	15,389,327		11,112,406	20,155,324	445,615,760	-13,138,744	-100,910,569
80.00%	421,431	36,500	68,858		0	6,885,766	0	6,885,766	351,590,957	60.00%	316,073			15,878,403	15,389,327		11,112,406	20,155,324	465,771,084	-13,269,558	-114,180,127
80.00%	426,829	36,500	70,207		0	7,020,733	0	7,020,733	358,611,689	60.00%	320,122			15,878,403	15,389,327		11,112,406	20,155,324	485,926,408	-13,134,591	-127,314,719
80.00%	432,228	36,500	71,557		0	7,155,700	0	7,155,700	365,767,389	60.00%	324,171			15,878,403	15,389,327		11,112,406	20,155,324	506,081,732	-12,999,624	-140,314,343
80.00%	437,627	36,500	72,907		0	7,290,667	0	7,290,667	373,058,056	60.00%	328,220			15,878,403	15,389,327		11,112,406	20,155,324	526,237,056	-12,864,658	-153,179,001
80.00%	443,025	36,500	74,256		0	7,425,634	0	7,425,634	380,483,689	60.00%	332,269				15,389,327		11,112,406	4,276,921	530,513,977	3,148,713	-150,030,288
80.00%	448,424	36,500	75,606		0	7,560,601	0	7,560,601	388,044,290	60.00%	336,318				15,389,327		11,112,406	4,276,921	534,790,898	3,283,680	-146,746,608
80.00%	453,823	36,500	76,956		0	7,695,568	0	7,695,568	395,739,857	60.00%	340,367				15,389,327		11,112,406	4,276,921	539,067,819	3,418,647	-143,327,962
80.00%	459,221	36,500	78,305		0	7,830,535	0	7,830,535	403,570,392	60.00%	344,416				15,389,327		11,112,406	4,276,921	543,344,740	3,553,614	-139,774,348
80.00%	464,620	36,500	79,655		0	7,965,501	0	7,965,501	411,535,893	60.00%	348,465				15,389,327		11,112,406	4,276,921	547,621,661	3,688,580	-136,085,768
80.00%	470,019	36,500	81,005		0	8,100,468	0	8,100,468	419,636,362	60.00%	352,514				15,389,327		11,112,406	4,276,921	551,898,582	3,823,547	-132,262,221
80.00%	475,417	36,500	82,354		0	8,235,435	0	8,235,435	427,871,797	60.00%	356,563				15,389,327		11,112,406	4,276,921	556,175,503	3,958,514	-128,303,706
80.00%	480,816	36,500	83,704		0	8,370,402	0	8,370,402	436,242,199	60.00%	360,612				15,389,327		11,112,406	4,276,921	560,452,424	4,093,481	-124,210,225
80.00%	486,215	36,500	85,054		0	8,505,369	0	8,505,369	444,747,569	60.00%	364,661				15,389,327		11,112,406	4,276,921	564,729,345	4,228,448	-119,981,776
80.00%	491,613	36,500	86,403		0	8,640,336	0	8,640,336	453,387,905	60.00%	368,710				15,389,327		11,112,406	4,276,921	569,006,266	4,363,415	-115,618,361
80.00%	497,012	36,500	87,753		0	8,775,303	0	8,775,303	462,163,208	60.00%	372,759				15,389,327		11,112,406	4,276,921	573,283,187	4,498,382	-111,119,979
80.00%	502,411	36,500	89,103		0	8,910,270	0	8,910,270	471,073,479	60.00%	376,808				15,389,327		11,112,406	4,276,921	577,560,108	4,633,349	-106,486,630
80.00%	507,809	36,500	90,452		0	9,045,237	0	9,045,237	480,118,716	60.00%	380,857				15,389,327		11,112,406	4,276,921	581,837,029	4,768,316	-101,718,313
80.00%	513,208	36,500	91,802		0	9,180,204	0	9,180,204	489,298,920	60.00%	384,906				15,389,327		11,112,406	4,276,921	586,113,950	4,903,283	-96,815,030
80.00%	518,607	36,500	93,152		0	9,315,171	0	9,315,171	498,614,091	60.00%	388,955				15,389,327		11,112,406	4,276,921	590,390,871	5,038,250	-91,776,780
80.00%	524,006	36,500	94,501		0	9,450,138	0	9,450,138	508,064,229	60.00%	393,004				15,389,327		11,112,406	4,276,921	594,667,792	5,173,217	-86,603,563
80.00%	529,404	36,500	95,851		0	9,585,105	0	9,585,105	517,649,334	60.00%	397,053				15,389,327		11,112,406	4,276,921	598,944,713	5,308,184	-81,295,379
80.00%	534,803	36,500	97,201		0	9,720,072	0	9,720,072	527,369,406	60.00%	401,102				15,389,327		11,112,406	4,276,921	603,221,634	5,443,151	-75,852,228
80.00%	540,202	36,500	98,550		0	9,855,039	0	9,855,039	537,224,445	60.00%	405,151				15,389,327		11,112,406	4,276,921	607,498,555	5,578,118	-70,274,110
80.00%	545,600	36,500	99,900		0	9,990,006	0	9,990,006	547,214,451	60.00%	409,200				15,389,327		11,112,406	4,276,921	611,775,476	5,713,085	-64,561,025
80.00%	550,999	36,500	101,250		0	10,124,973	0	10,124,973	557,339,424	60.00%	413,249				15,389,327		11,112,406	4,276,921	616,052,397	5,848,052	-58,712,973
80.00%	556,398	36,500	102,599		0	10,259,940	0	10,259,940	567,599,364	60.00%	417,298				15,389,327		11,112,406	4,276,921	620,329,318	5,983,019	-52,729,954
80.00%	561,796	36,500	103,949		0	10,394,907	0	10,394,907	577,994,271	60.00%	421,347				15,389,327		11,112,406	4,276,921	624,606,239	6,117,986	-46,611,968
80.00%	567,195	36,500	105,299		0	10,529,874	0	10,529,874	588,524,145	60.00%	425,396				15,389,327		11,112,406	4,276,921	628,883,160	6,252,953	-40,359,016
80.00%	572,594	36,500	106,648		0	10,664,841	0	10,664,841	599,188,985	60.00%	429,445				15,389,327		11,112,406	4,276,921	633,160,081	6,387,920	-33,971,096
80.00%	577,992	36,500	107,998		0	10,799,808	0	10,799,808	609,988,793	60.00%	433,494				15,389,327		11,112,406	4,276,921	637,437,002	6,522,887	-27,448,209

Some uncertainties, assumptions and variables

Because projected population increases and projected waste generation assumptions have very significant effects on the long term outcomes of various approaches (and, in combination with other factors, such as diversion rates, the economic profile of WTE), this analysis utilizes a range of estimated annual gross tonnages of municipal solid waste generated annually in Frederick County.

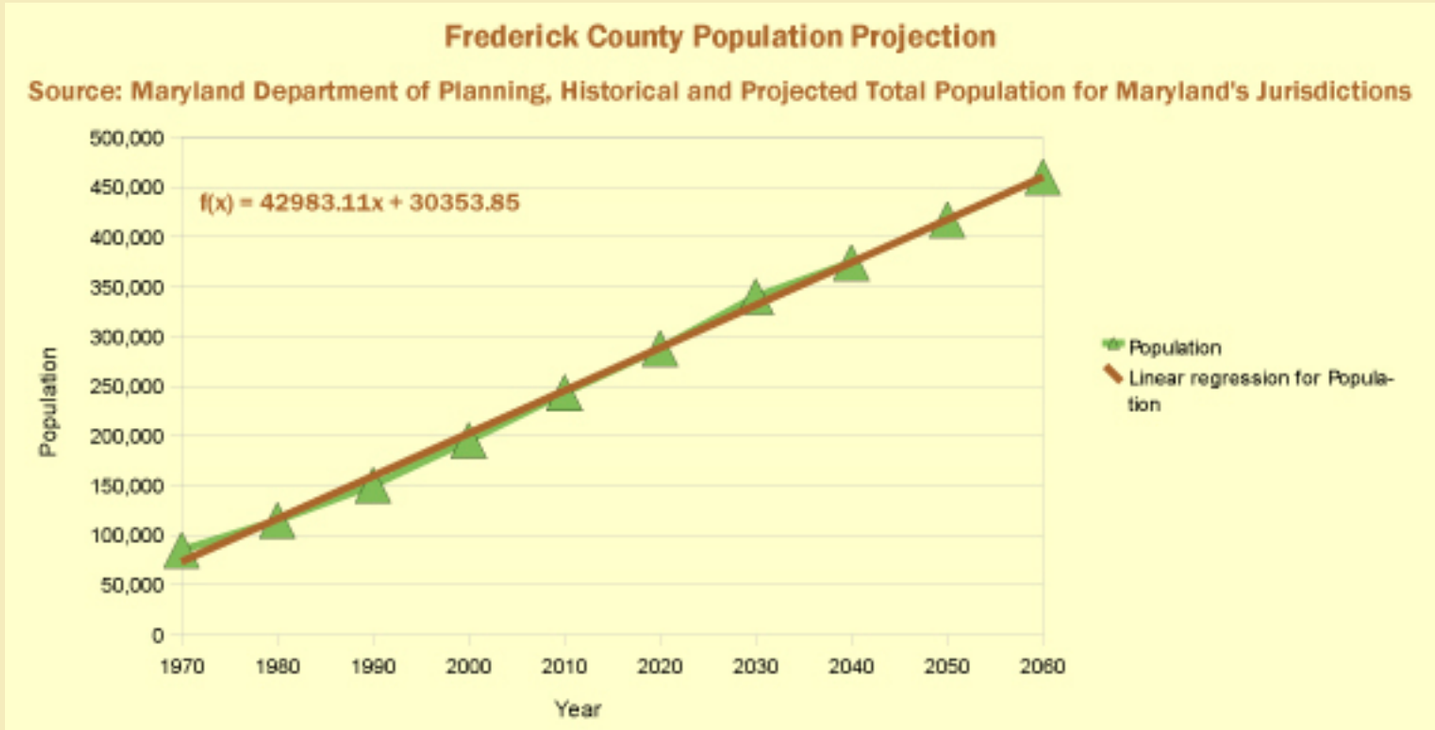
1) Estimated tons per capita based on preliminary report of 2007 Frederick County Population and MSW generation (1.57 tons per capita) and Maryland Department of Planning Population Projections.

2) Gross tonnage estimates from the 2005 R.W. Beck Report through 2030, projected through 2040 with a 2% per year growth.

3) Frederick County DUSWM Projections (from Landfill Ash Analysis provided to Commissioner Hagen by DUSWM Director Mike Marschner).

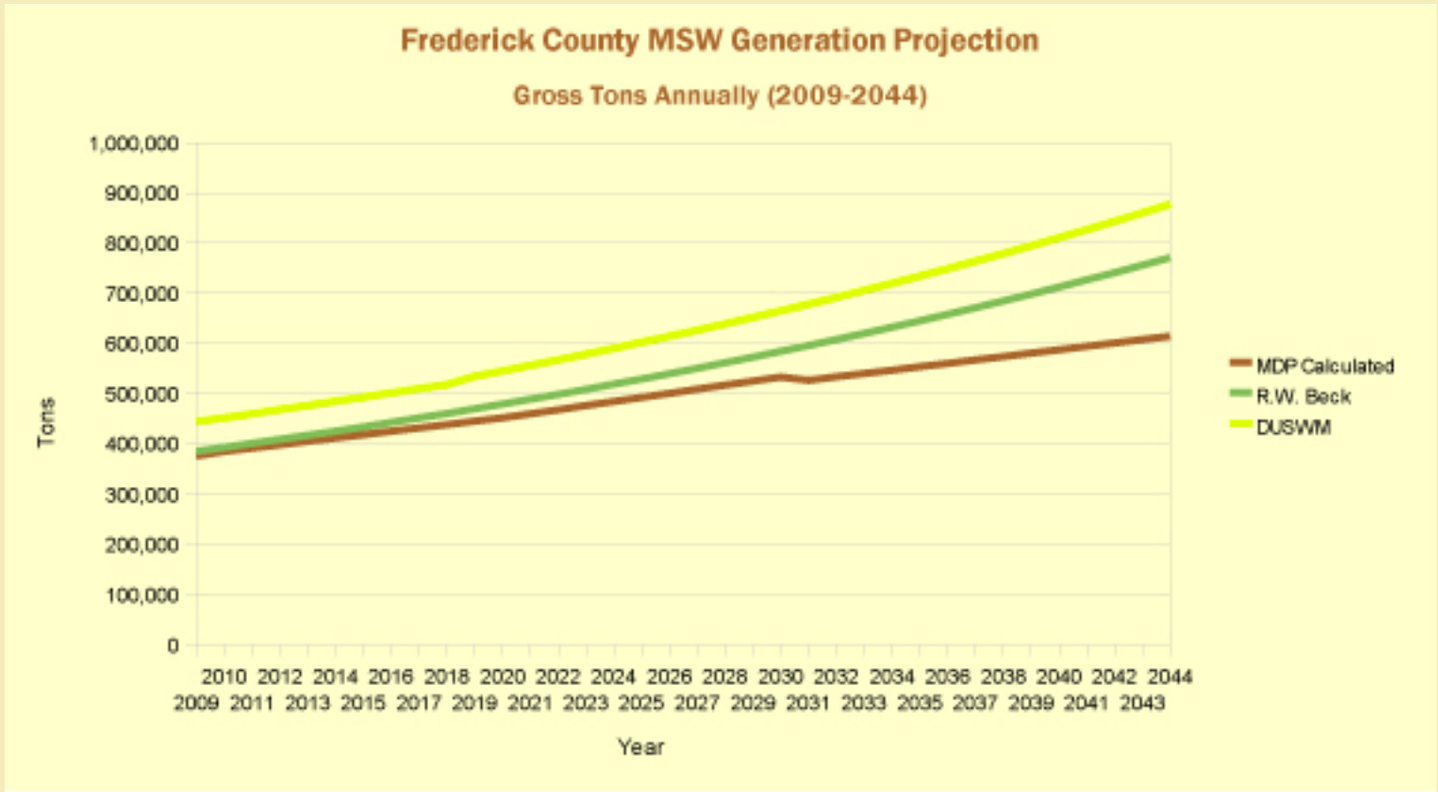
Uncertainties, assumptions and variables (cont.)

Maryland Department of Planning
Population Projections



Uncertainties, assumptions and variables (cont.)

Cost of long distance hauling per ton



This comparison used a $100 per ton cost factor for all analysis models.

Since March of 1994, Diesel prices have increased an average of 8.54% per year (not adjusted for inflation). None of the revenues, prices, and costs figures in this report are adjusted for inflation. Thus, $100 in 2009 still equals $100 in 2044 in our analysis (they are not “Net Present Value” numbers).

So, the only way that the $100/Ton is not highly conservative would be if A) the current price of hauling is significantly higher than $100/Ton (it is considerably less currently) or transport costs increased at a sustained rate significantly higher than the rate of inflation.

Some WTE uncertainties and assumptions

The following panels list and describe some of the **key information for which precise numbers are not currently available for any direct comparison**.

Beck and county numbers have been used wherever possible. And, generally, these numbers and assumptions are very favorable to Waste-to-Energy, even if and when there are compelling reasons to question them, or that it's likely the actual numbers would be somewhat or much less favorable.

Some WTE uncertainties and assumptions

Cost of constructing a 1,500 tons per day WTE facility

Frederick County has received initial "Best and Final" bids from Covanta and Wheelabrator (Waste Management, Inc.).

They are being processed by staff at this time, and BOCC members have not seen them.

The **2005** R.W. Beck Report used an estimated construction cost of $323,000,000.00, and assigned $194,000,000.00 of that as Frederick County's share.

It is entirely possible that number will be low, perhaps by tens of millions of dollars, but that remains to be seen.

Some WTE uncertainties and assumptions

Annual debt service payments for the initial construction

The numbers used for this comparison are based on the construction estimate above, and a 20-year financing period.

If the construction costs are notably higher, of course, the annual debt service payments will be higher.

The numbers could also be affected by using a different financing period (for example, twenty-five years).

As with most of the numbers in this comparison, when better numbers are available (soon, in this instance), we can “plug” those assumptions into the model instead.

Some WTE uncertainties and assumptions

Operating Costs

The county does not have a Service Contract (a “long term operation and maintenance agreement”) to review or compare.

A draft likely exists, but it is not available. In any case, an agreement would still need to be negotiated.

So, for the WTE model in this comparison, we are using financial data based on the Montgomery County-Northeast Maryland Waste Disposal Authority (“NMWDA“) contract, with a 15/18ths proportion. The Service Agreement is dated 11/16/90, and the facility opened in 1995. (The WTE facility in Montgomery County has a capacity of 1,800 tons per day. The Frederick County WTE facility is proposed to be sized for 1,500 tons per day.)

Again, as with most of the numbers in this comparison, if you think a different number or range would be more appropriate, or when better numbers are available, we can “plug” those assumptions into the model instead.

NOTE: From "Long-term Solid Waste Initiatives” presentation by staff in October, 2007: "If the Frederick and Carroll County Commissioners choose to pursue the Regional WTE, they would execute a Memorandum of Understanding with the Authority to authorize final negotiations with one or both Vendors, and direct the Staff to bring a draft Contract Service Agreement between the selected vendor and the Authority and a mirror Energy Recovery Agreement among the Authority and the Counties."

Some WTE uncertainties and assumptions

The site for a regional Waste-to-Energy facility

No site has been selected, yet.

Only the site adjacent to the Ballenger-McKinney Wastewater Treatment Plant has been identified and discussed. It was identified as part of the request for "Best and Final" bids, so that the bids could be based on an actual site. Other sites have been or are being explored by county staff. Those sites will be part of a future public discussion. It is anticipated that this information will be presented before the end of the year.

It is certainly possible that any site selected could affect costs associated with the WTE model, particularly any not already owned by the county.

WTE economic profile used in this comparison

As noted above, because of the absence of a better source for such numbers at the moment, for the purpose of this **initial** comparison, I am using some numbers based on the Waste-to-Energy facility operating in Montgomery County. That is an 1,800 tons per day facility.

The current proposal for Frederick County, with Carroll County (and perhaps significant waste from other counties) is for a 1,500 tons per day facility. This model assumes a Frederick County cost or revenue at 15/18ths the recent Montgomery County experience.

Even though there are certainly some operating costs that would not be reduced by having a somewhat smaller facility, and even though some numbers skew favorably to WTE in a manner that is highly questionable (their recent revenues from the sale of electricity and ferrous metals, for instance, are relatively high, since that facility is now operating at capacity, and ours may not be, at least not for a significant period).

NOTE: This comparison is not considering any differences in collection costs (which might have some variations in different scenarios).

WTE economic profile used in this comparison

Cost of constructing a 1,500 tons per day WTE facility:
$323,000,000 (Beck's **2005** estimate)
$194,000,000 (Frederick County's contribution)

Additional financing fee of 2% of the principal included in debt total.

Annual debt service payment: $15,551,013
(Frederick County share, based on 20 year bond at 5% interest)

Annual Operating Costs: $17,966,363
(Frederick County's 60% share = $10,779,818)

Annual Pass-through Costs: $5,620,343
(Frederick County's 60% share = $3,372,206)

Annual NMWDA Fees: $700,171
(Frederick County's 60% share = $420,103)

Annual electricity and ferrous metals revenues: $18,520,676
(Frederick County's 60% share = $11,112,406)

All operating costs and revenues assumed to be split 60% / 40% between Frederick and Carroll County.

Operations commence in 2015. County continues to transport all but 50 TPD MSW in interim.

Annual debt service payment: $15,551,013
Total annual operating cost estimate for Frederick County: $4,276,921

Some additional WTE uncertainties (risks)

A selection of potential higher costs and risks associated with the Waste-to-Energy path

1) The cost of new regulatory mandates.

2) Operational Efficiencies (utilization of incinerator capacity)

3) Waste stream of future less suitable for incineration.

4) Frederick County population growth rate.

PLEASE NOTE: For the list of items above, NO values are assigned for the purposes of this comparison, even though it would be highly negligent and irresponsible not to recognize and fully assess the potential costs - the economic risks - associated with these real possibilities., especially considering that with the WTE model, we are locking ourselves in (committing in advance to meet - pay for - any and all required regulatory changes and upgrades).

Some additional WTE uncertainties (risks)

The cost of new regulatory mandates.

1) REGULATORY CHANGE: Cap and Trade **is** coming!

President-Elect Barack Obama *"supports a cap-and-trade system to cut U.S. emissions 80% below 1990 levels by 2050. Would auction off 100% of emission credits,* ***making polluters pay for the right to emit greenhouse gases****."*

While this is clearly an ambitious goal, and others might support a lesser goal (John McCain "supports a cap-and-trade system to cut U.S. emissions 60% below 1990 levels by 2050), there is a general consensus in Washington that cap-and-trade programs, in one form or another, are almost inevitable.

From the Congressional Budget Office: http://www.cbo.gov/ftpdocs/89xx/doc8934/AppendixA.8.1.shtml

"*State-level efforts to develop [cap-and-trade programs] are under way. For example, 10 states—Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont—are developing a multistate cap-and-trade program covering greenhouse-gas emissions, the Regional Greenhouse Gas Initiative (RGGI).*" And…

"*The largest cap-and-trade program for CO2 emissions at present is the European Union's Emission Trading Scheme (ETS). The initial phase of the ETS—the warm-up phase—went into effect in 2005 and continued through 2007. The second phase, which is in effect from 2008 through 2012, coincides with the initial phase of the Kyoto Protocol. The ETS currently covers carbon dioxide emissions from roughly 12,000 sources across the 27 countries of the European Union. … Allowances valued at $23 billion and covering more than 1 billion metric tons of emissions were traded in the EU's ETS in 2006.*"

Some additional WTE uncertainties (risks)

The cost of new regulatory mandates.

2) REGULATORY CHANGE: Tighter standards for a variety of other air emissions

- Mercury
- Lead
- Dioxins and furans
- Ultra-fine particles (or nanoparticles)
- other…

Significant changes to air emission standards are common and frequent (and more so under some administrations than others), and they almost invariably move in one direction – toward better monitoring and/or emissions reductions. The cost of upgrading facilities to meet new standards can be modest or very expensive, depending.

Some additional WTE uncertainties (risks)

The cost of new regulatory mandates.

3) REGULATORY CHANGE: Incinerator ash

It may be considerably less likely than significant changes in various air emission standards, but it is possible that incinerator ash (fly ash, bottom ash, or the combination of the two) could be more regulated, or even defined as hazardous.

If that were to happen, the county would have problem on its hands, and would need to find a new and more expensive disposal option other than the current, low cost, place, which is to use it as cover in our existing landfill.

Montgomery County currently spends additional millions each year to ship (by rail) its ash to a dedicated cell in an out-of-state mega-landfill.

Some additional WTE uncertainties (risks)

Operational efficiencies.

The current assumptions underlying the RW Beck scenario include assumptions that the WTE facility operates, from the beginning, at a level of efficiency (utilization of capacity) that is not possible without importing waste from outside the county (besides Carroll County). Even more rapid population growth (than any projections) and failing to meeting our current recycling goals would suffice without such importation. (Please note that this is yet another way in which the WTE model used here benefits from what could be called best case scenarios.)

From R.W. Beck: "Solid Waste Management Options" (October 3, 2005):

"Waste from outside the county is accepted until the county requires all the capacity"

...and...

"Annual plant capacity factor – 90%"

In addition, there is language in various Beck and County documents...

Beck: "The Authority, with Frederick County's approval, shall optimize the energy recovery rates and the REB by sub-contracting excess waste capacity to another Authority member."

There has been significant discussion, uncertainty and debate about whether or not the county would import waste (besides Carroll County), and about whether or not the final Service Agreement would include significant penalties for failing to meet a certain level of waste provided to the WTE facility.

Some additional WTE uncertainties (risks)

Waste stream of future less suitable for incineration

The Beck Report excludes consideration of potential changes to the composition of the waste stream that are likely to result from changes (improvements) in manufacturing processes, packaging, or government regulation over time.

But it is entirely probable – actually, it is only a matter of degree and timing – that a variety of changes in our materials economy, and waste reduction initiatives now underway (with many more to come), will make the waste stream of the not-too-distant future considerably less suitable (or less available) for utilization in a mass burn incinerator. A sample list of some of the changes includes:

- Increased recycling or composting of items producing most Btus
- End of Life Management
- Sustainable Packaging
- Product Stewardship
- Extended Producer Responsibility
- Product Take-Back Programs
- Initiatives targeting zero waste
- New and/or more efficient and environmentally-benign conversion technologies capable of processing (converting) materials that are not recyclable or compostable.

Please note that, besides making the wastestream less suitable for incineration, most of the changes that are coming will also make our wastestream more recyclable and compostable.

Some additional WTE uncertainties (risks)

Frederick County population growth

There are many reasons to think that Frederick County's population growth will be less than is assumed (and necessary) in some or all of the current models that have been used to evaluate WTE.

In any case, it is certainly more than a remote possibility, given a number of factors, from the current plans and policies (some implemented and others on the way) of the county, to the impact of changing state policies regarding growth, to market forces and demographic changes in a future less friendly to long distance commuting, etc.

In fact, the Frederick County Planning Division has published population growth estimates, with the approval of the Metropolitan Washington Council of Governments...

http://www.co.frederick.md.us/index.asp?NID=1480

...that are significantly lower than those implied by the Beck Report: 9% for 2010-2015, 8% for 2015-2020, 7% for 2020-2025, and 6% for 2025-2030.

Some additional WTE uncertainties (risks)

Frederick County population growth (continued)

Using the following assumptions:

- A maximum diversion rate of 60%,
- 100% of remaining waste eligible for WTE,
- R.W. Beck's higher waste tonnage estimates,
- No reduction in the composition of the waste stream from improvements in manufacturing processes, regulatory changes, or consumer behavior,

...Frederick County might not generate 900 TPD of solid waste until the year 2048.

Using the same assumptions with :

- The County's own population projections (through 2030, then 2% per year thereafter),

...Frederick County might not generate 900 TPD of solid waste until after 2054.

It is possible that a 1500 tons per day facility shared between Frederick and Carroll Counties may not be "full" on even the last days of operation without significant and sustained sources of waste from elsewhere. Over the lifetime of the facility, it seems Frederick County residents could account for less than half of the waste incinerated.

What will be the source(s) of the considerable tonnage of additional waste material that will likely be needed to support our considerable investment in WTE? And, even if those sources can be secured, why would Frederick County embark on a capitol project so much larger than our needs?

Alternative Concept

Basic Components of an Alternative Scenario

1) Increasing recycling, resource recovery, composting and other diversion (70% by 2020, 80% by 2030).

2) Utilization of the same landfill capacity that is currently planned / projected with the WTE proposal.

3) Out of county hauling of a decreasing volume of "residuals."

Alternative Concept

Resource Recovery Business Park

Alternative Concept

Resource Recovery Business Park

Key Components:

- Materials Resource Facility (MRF)
- Center for hard-to-recycle materials
- Compost facility for organic materials
- Reuse center (such as the current Re-Store)
- Construction and demolition (C&D) facility
- Public education

(C&D is not considered as distinct element from current plan and/or WTE plan)

PRICE: $25,000,000. to $35,000,000.

PLEASE NOTE: Frederick County's new transfer station (almost complete) was designed so that it could be converted to a MRF. A significant portion of the $11,000,000.00 investment could be subtracted from capital costs (and debt service) of the alternative scenario. That could substantially reduce the overall cost of the MRF and the Resource Recover Park, but that savings is not included here, except to note it.

Alternative Plan Economic Profile

Resource Recovery Business Park

Cost of constructing Resource Recovery Business Park used for this comparison:

$40,000,000.00

NOTE: This is a very high estimate (for a “gold plated,” state of the art facility). The real number could well be millions less (again, very conservative numbers are used).

Financing Fee of 2% of Principal included in debt total.

Annual debt service payment: $3,273,898 (based on 20 year bond at 5% interest)

RRBP operating costs and revenues average a “net zero” operational profile.

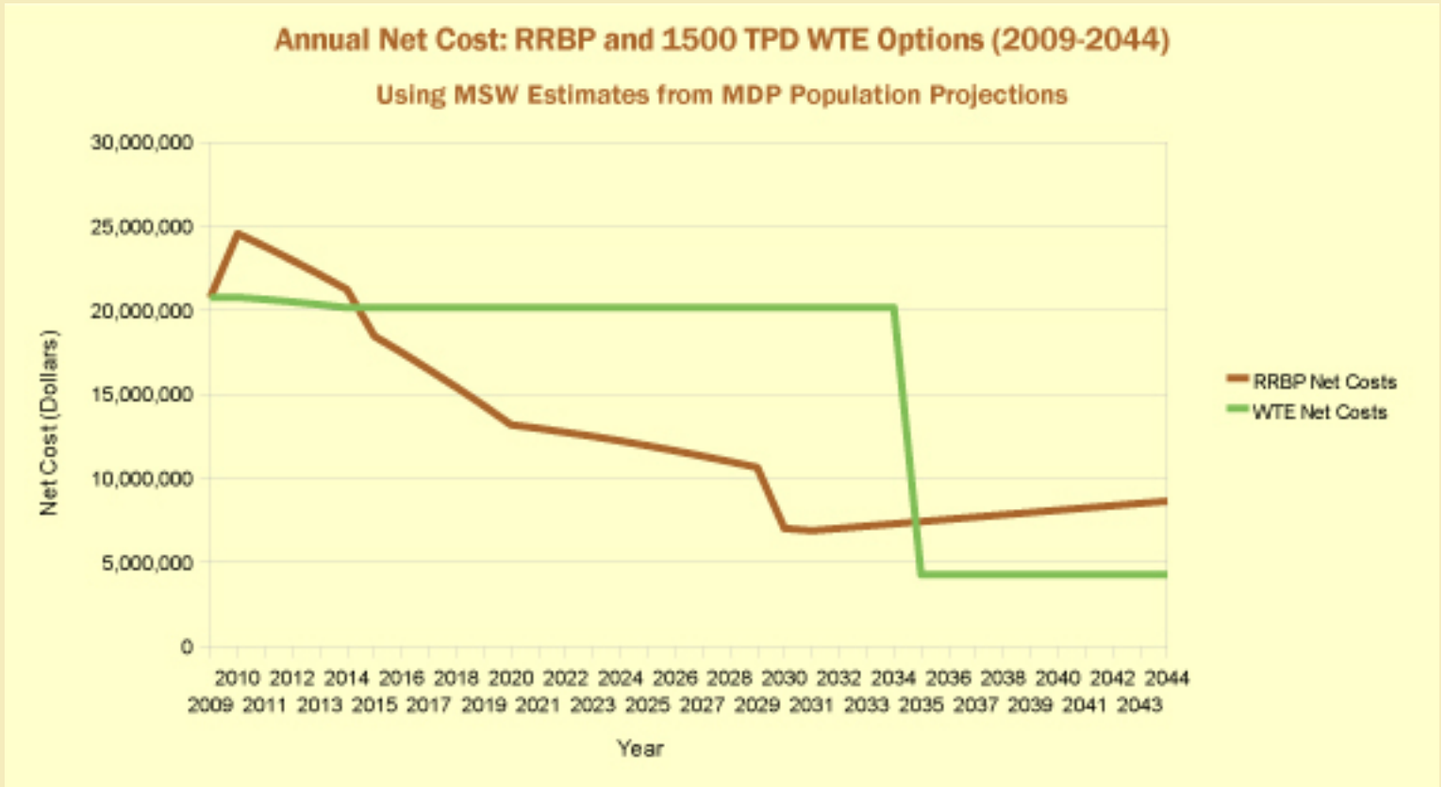
Operations commence in 2010, County continues to transport all but 50 tons per day MSW until 2015.

Landfill utilized at equal or lesser rate than WTE model (which includes 50 tons per day MSW until projected WTE start date in 2015).

Comparison of RRBP and WTE models for 2009 – 2044

Using Maryland Department of Planning ("MDP") Population Estimate as the basis for MSW projection:

Costs are compared on an annual as well as cumulative basis.



Comparison of RRBP and WTE models for 2009 – 2044

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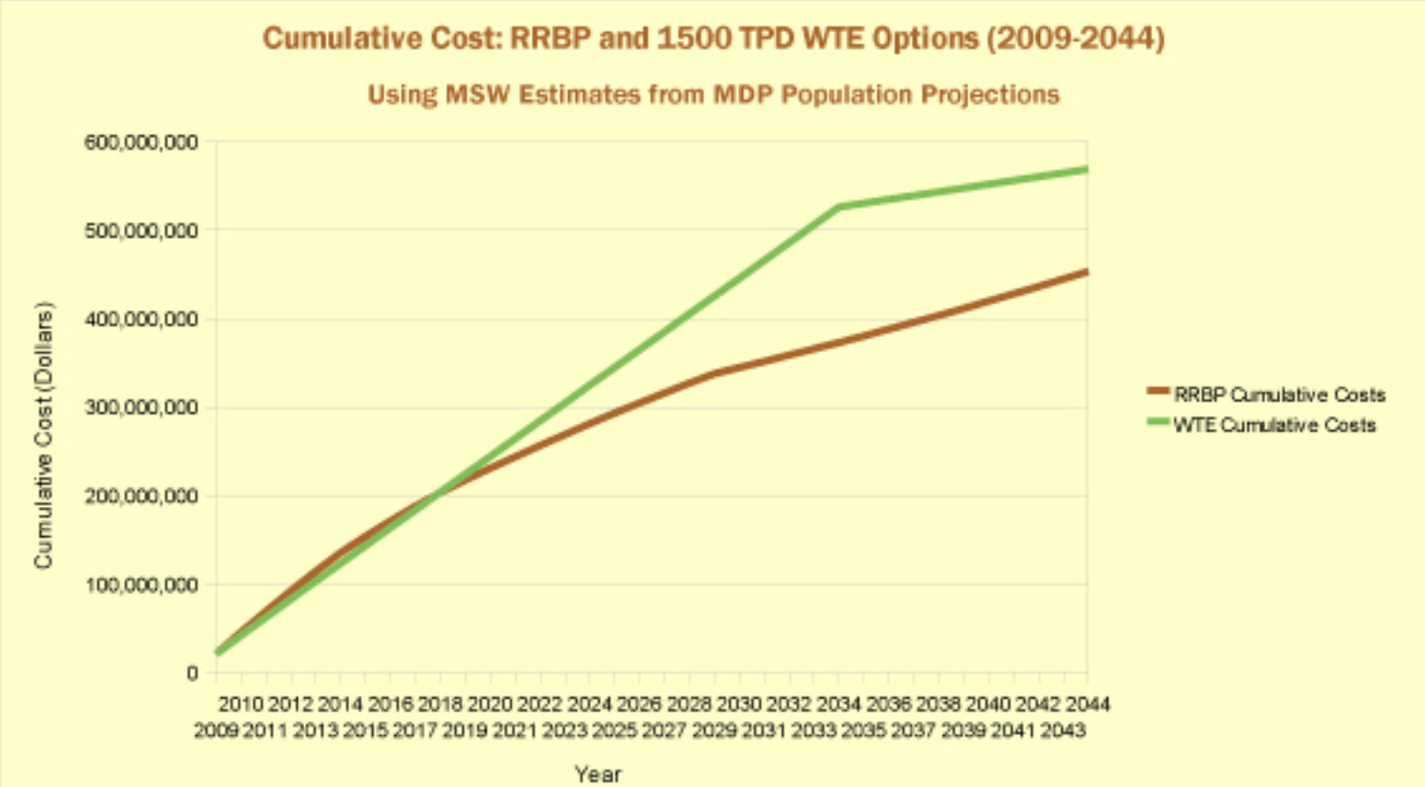
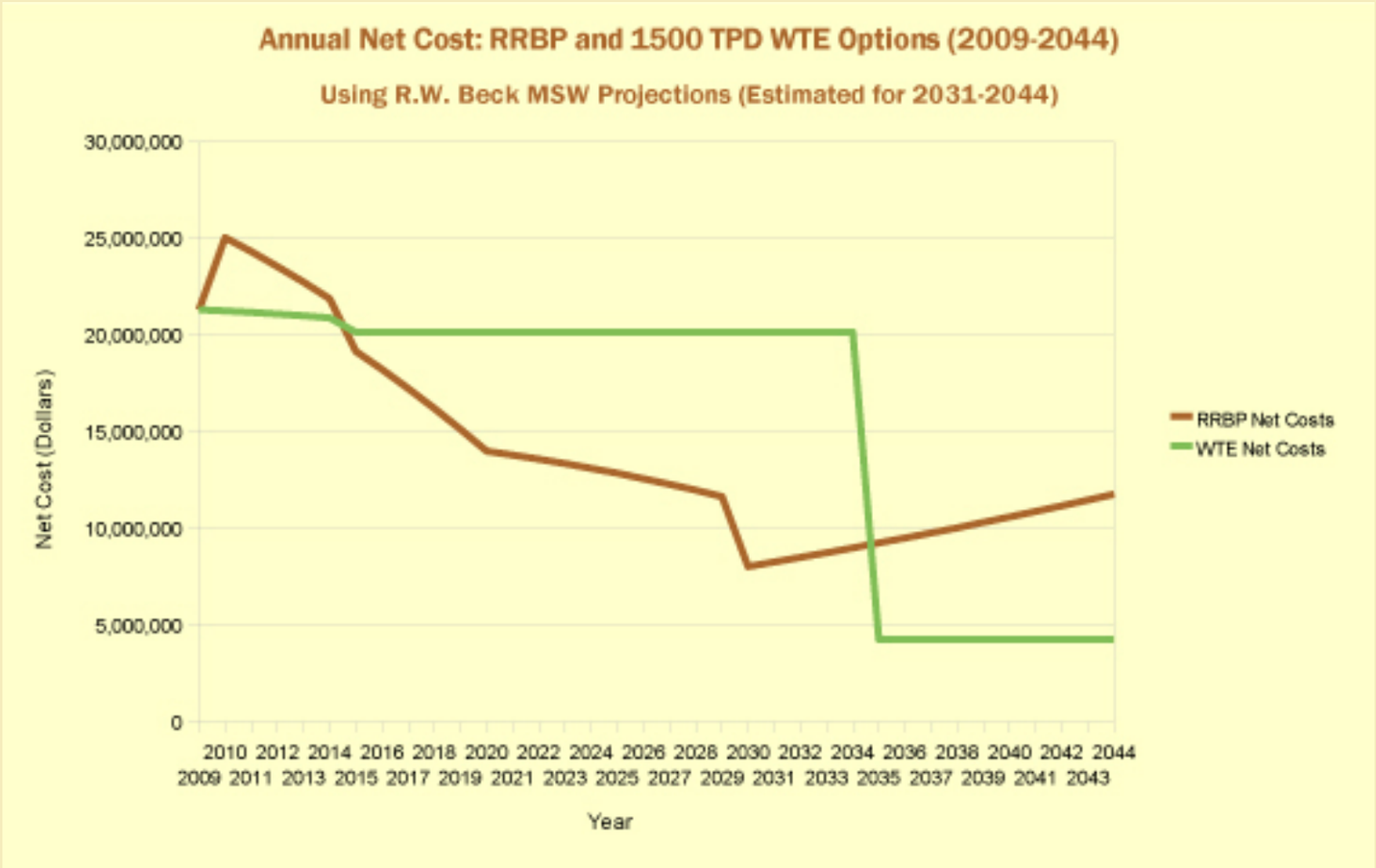


Comparison of RRBP and WTE models for 2009 – 2044

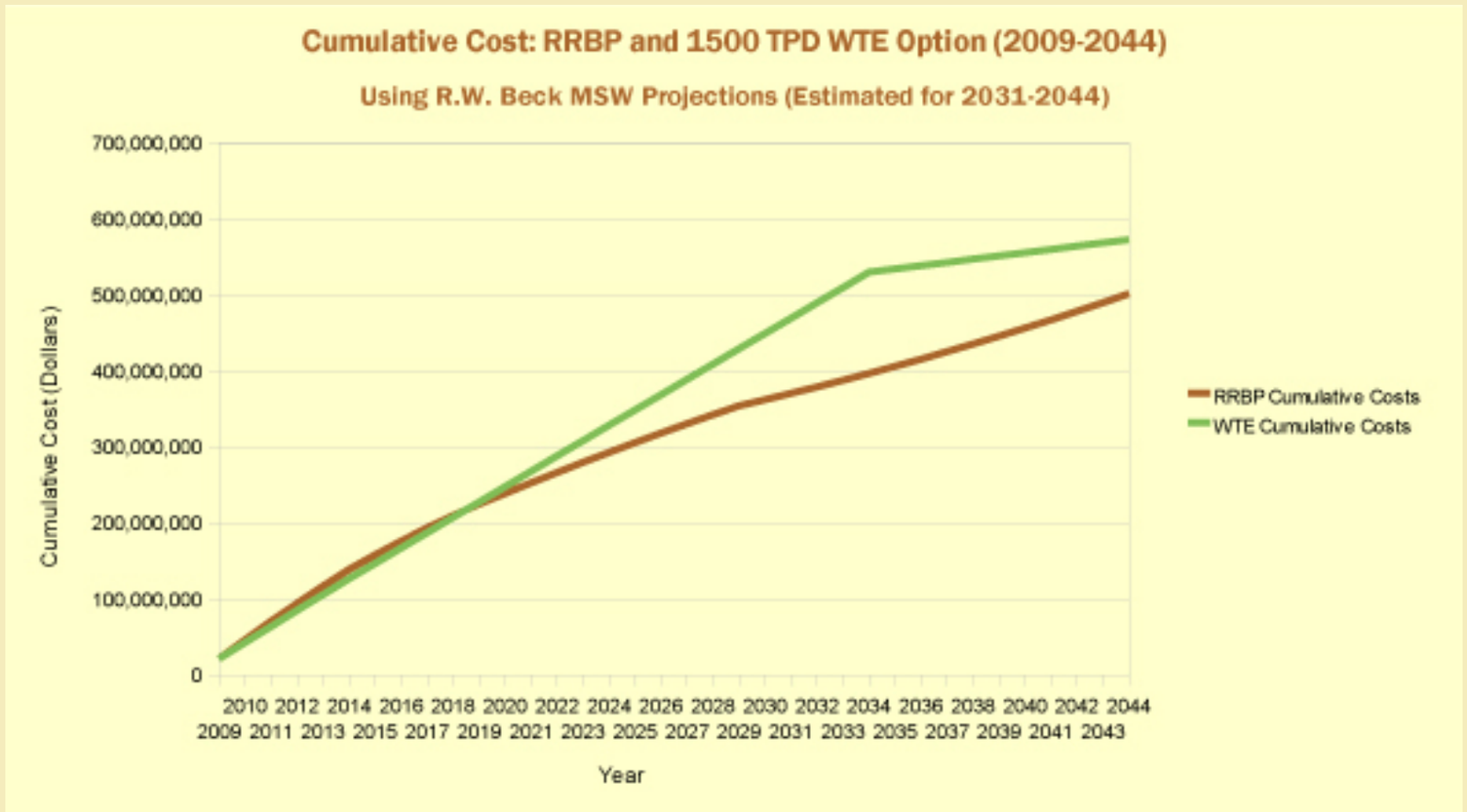
Using R.W. Beck MSW Projections (estimated for 2031 – 2044)



PLEASE NOTE: Beck Report assumes increases in per household waste generation rates, every year, continuously.

Comparison of RRBP and WTE models for 2009 – 2044

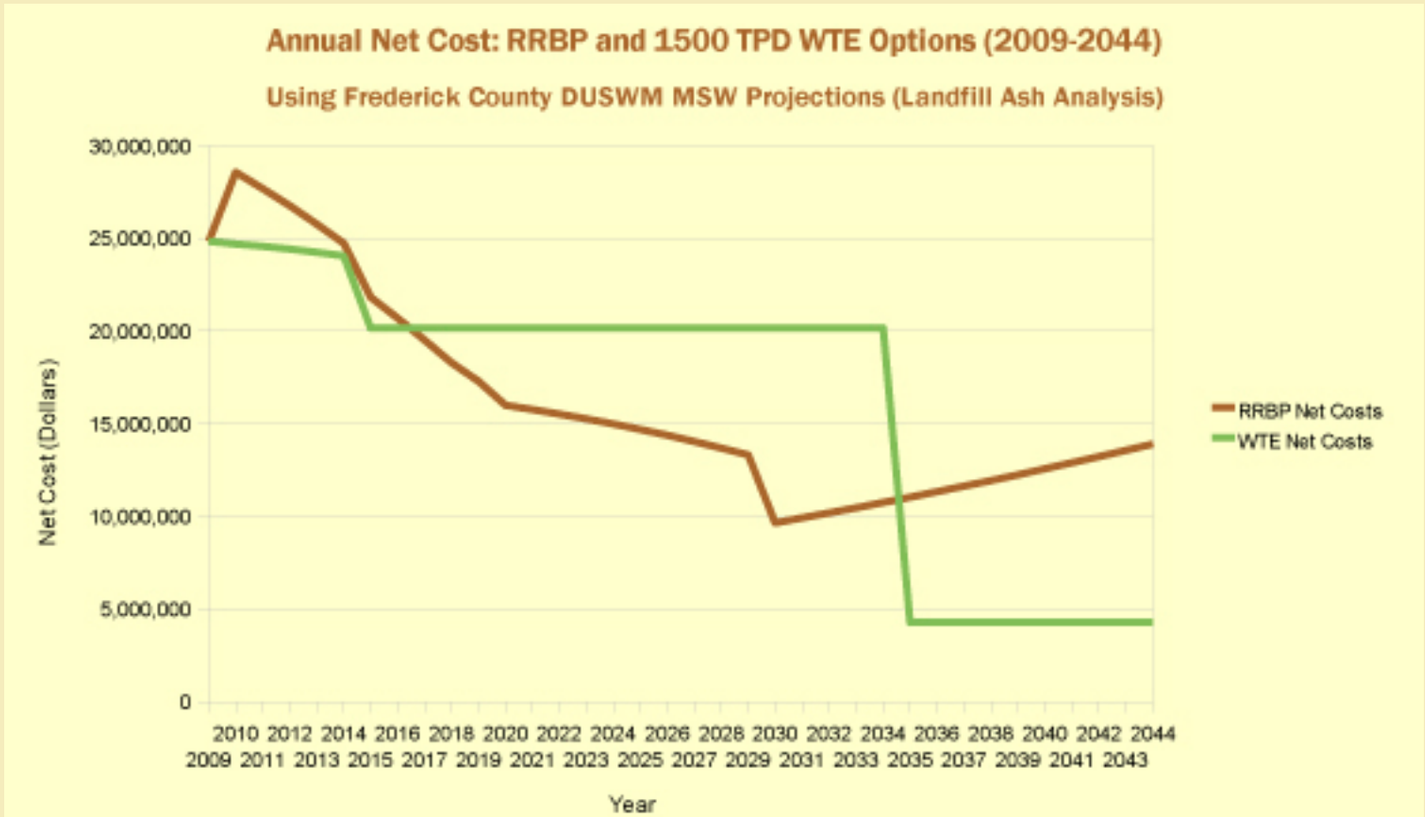
Using R.W. Beck MSW Projections (estimated for 2031 – 2044)



PLEASE NOTE: Beck Report assumes increases in per household waste generation rates, every year, continuously.

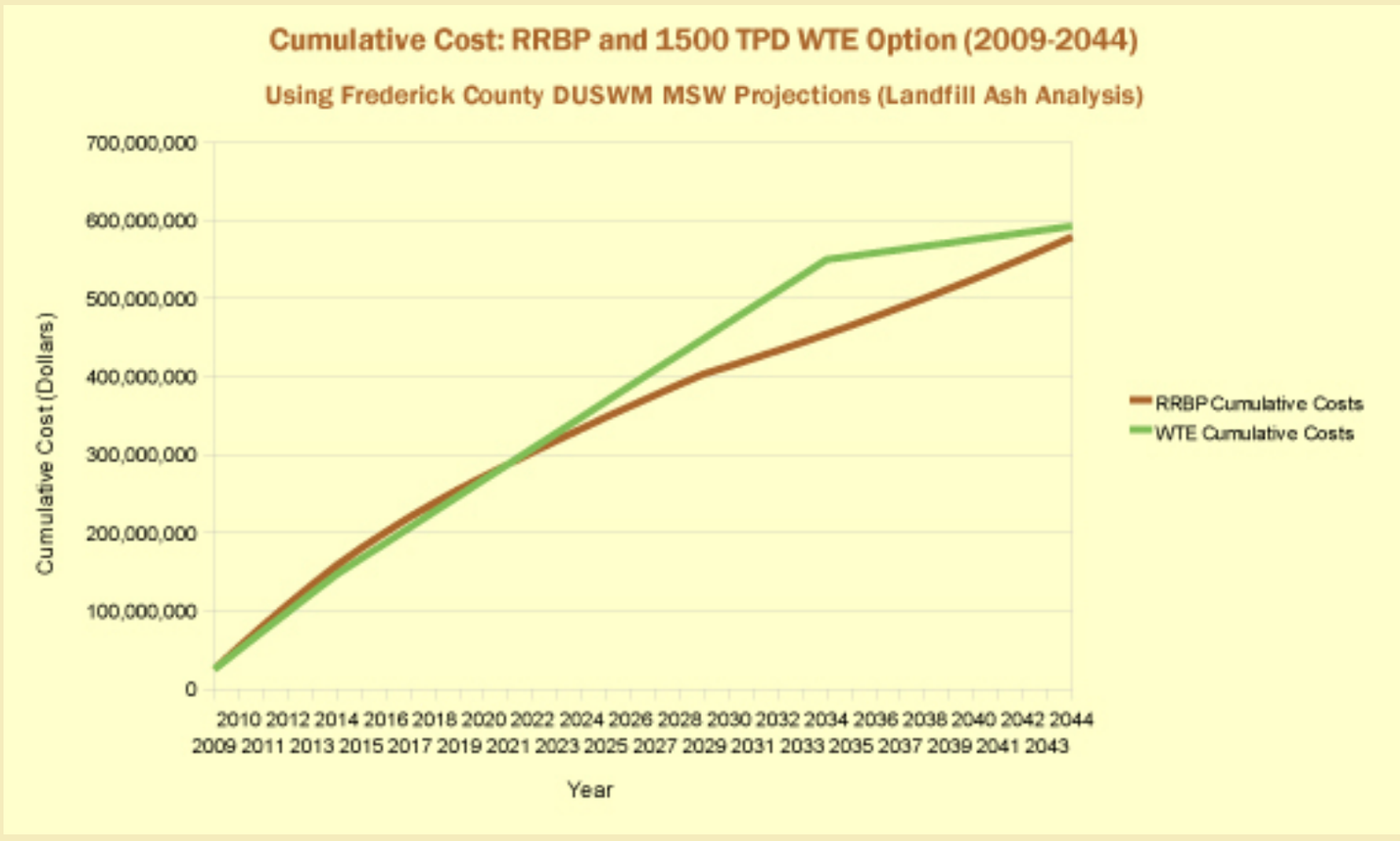
Comparison of RRBP and WTE models for 2009 – 2044

Using DUSWM MSW Projections (estimated for 2031 – 2044)



Comparison of RRBP and WTE models for 2009 – 2044

Using DUSWM MSW Projections (estimated for 2031 – 2044)



Comparison of RRBP and WTE models for 2009 – 2044

NOTE: CUMULATIVE COSTS LESS IN ALL THREE MODELS

PLEASE NOTE: The numbers – and the underlying assumptions – used for the WTE side of the basic and initial comparison herein are very favorable to WTE. Even when the numbers are highly suspect, or, at least, far from certain, the Beck and county numbers are used, which, upon analysis, could be referred to as "best case" possibilities (best case for WTE, that is).

A more realistic evaluation would run the comparison with a range of different, less favorable numbers, for various costs.

Conversely, the numbers used for the "alternative" concept above are very conservative. A case could easily be made for running the comparison with different, significantly more favorable assumptions.

Additional elements: Potential improvements in performance of the alternative model

Revenues from Recycling

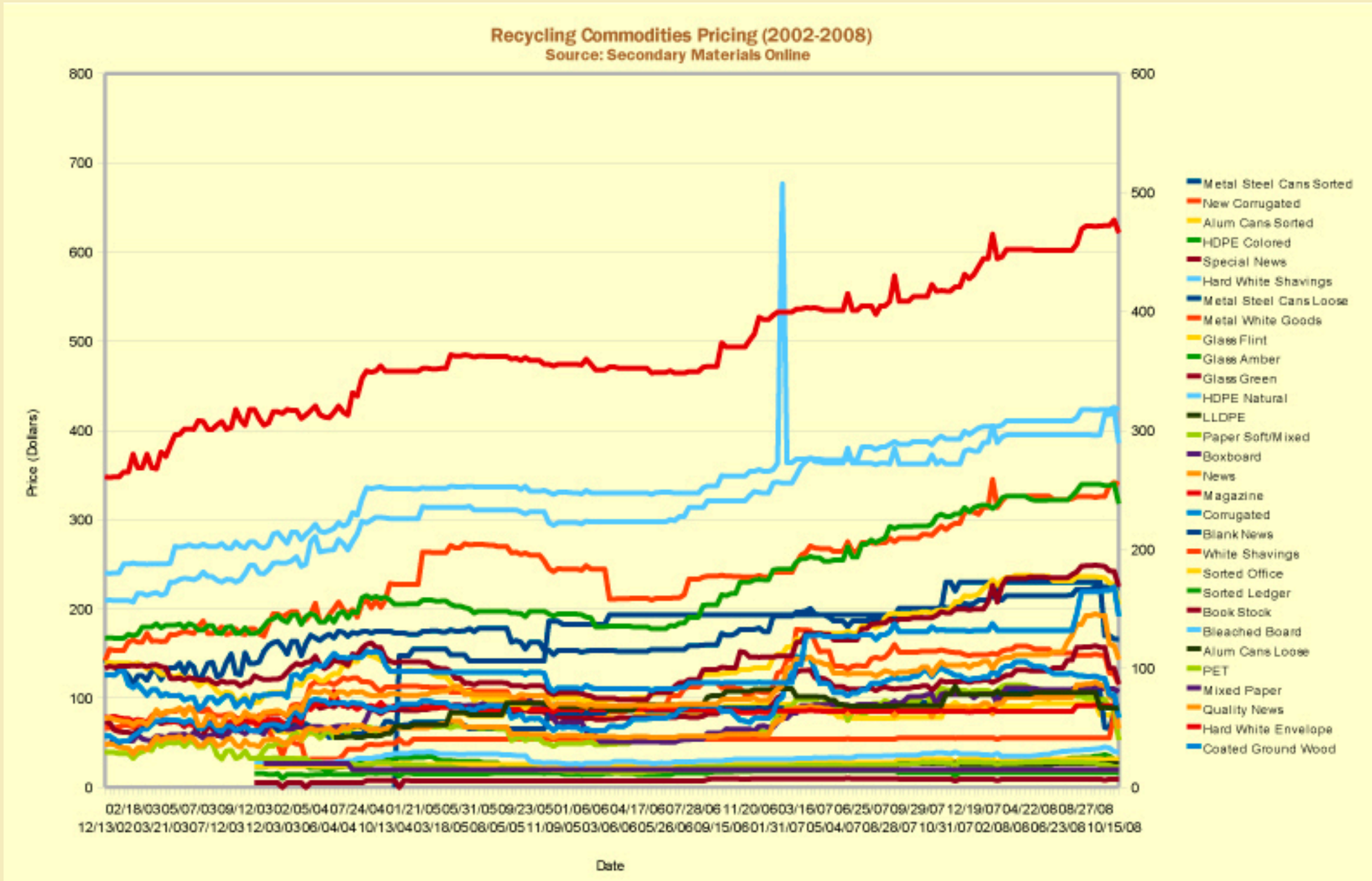
This comparison takes an extremely conservative approach with regard to the current and future value of recycled and recovered materials on the market.

In this model, it is assumed that the value of the recycled materials is exactly equal to the cost of operating the Resource Recovery Park.

It would be reasonable and realistic to study this scenario (or others) with higher values – and perhaps significantly higher revenues after five, ten, twenty years.

Additional elements: Potential improvements in performance of the alternative model

Revenues from Recycling: Recycling commodities pricing (2002 - 2008)



Are these reasonable and achievable recycling goals and timelines?

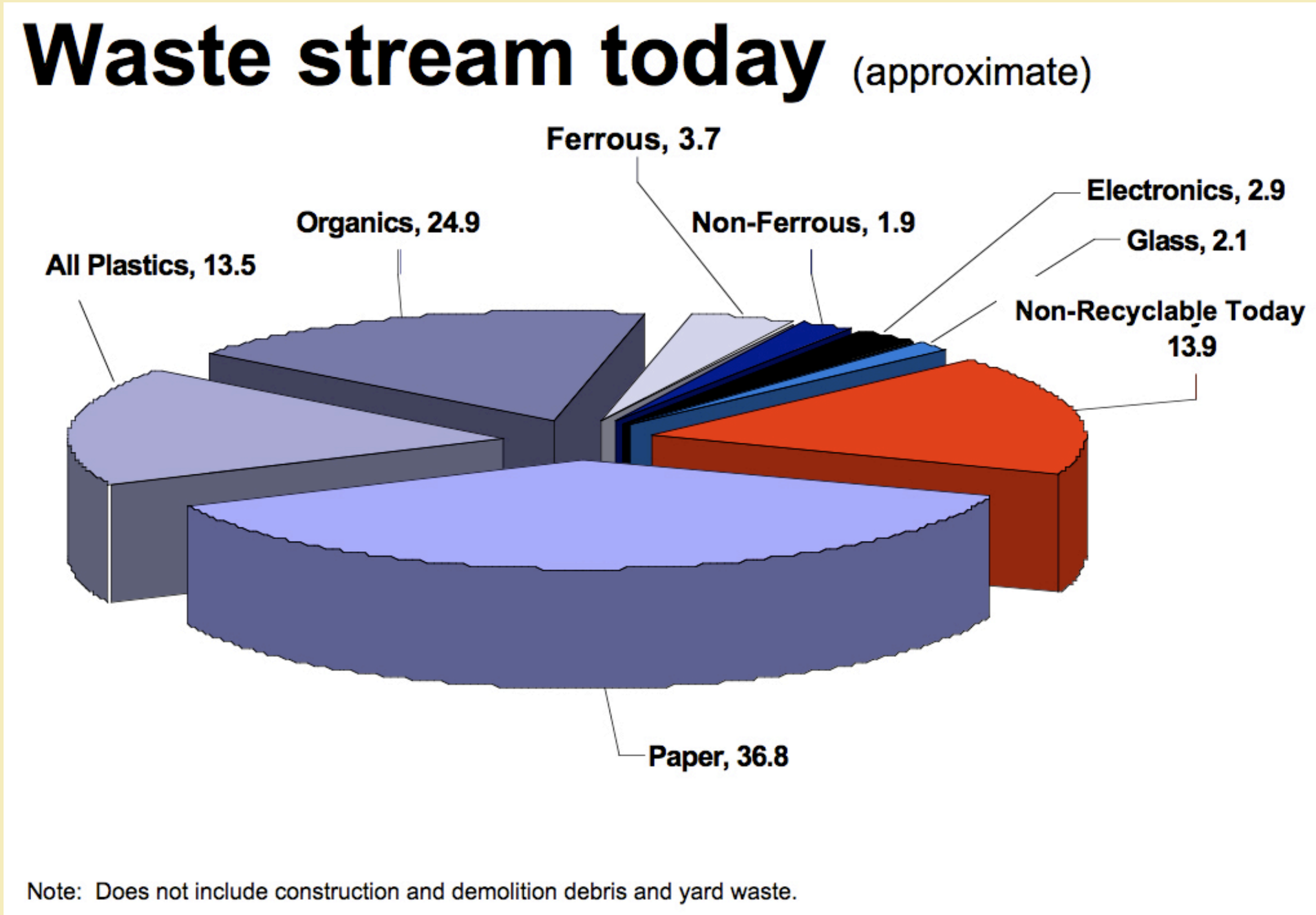
The goal of reaching a 70% recycling or diversion rate in twelve years is credible. The secondary goal of reaching 80% in twenty-two years is also legitimate, requiring only a one percent improvement per year during a decade that starts a dozen years from now.

But, PLEASE NOTE: Those rates is not absolutely required to make this alternative approach a better economic option.

Some GUIDING PRINCIPLES of a more aggressive recycling plan:

- Identify service voids (lowest hanging fruit)
- Create effective partnerships with for-profit and non-profit organizations to expand services with minimal investment.
- Focus first and most on programs that are convenient and/or can be established with meaningful economic incentives
- Work with private haulers.
- Help build infrastructure and then require its use once it's convenient and economical.

A generalized view of our wastestream



Note: Does not include construction and demolition debris and yard waste.

A partial list of options and elements

- Single stream recycling
- “Pay as you throw” (PAYT)
- Composting (low hanging fruit first - institutions, schools, office buildings, restaurants, grocery stores and other commercial enterprises,
- Source Reduction efforts (education and support - such as encouraging back yard and other on-site composting)
- Ban certain materials (as other opportunities for their disposal are established)
- No tipping fee for single stream or source separated recyclables (beyond that, at some point in time, perhaps we might want or need to pay haulers for either single stream or source-separated recyclables).
- Establish creative incentive and reward programs.
- Private partnerships
- Sustainability Commission

Attachment: Recycling Resources: 10 pages of selected resources and links related to recycling and other changes in our materials economy, including information about some communities that are leading the way.

Some real and potential value and benefits of maintaining flexibility and adaptability

• Much less debt.

• Avoid a 20-30+ year commitment to a large, expensive and economically risky technology and facility in a rapidly changing environment.

• Avoid being irretrievably locked in to any and all potential (and not at all unlikely) upgrades and retrofits required by a range of possible and probable regulatory mandates (some of which could be very expensive).

• Maintain and maximize the ability to benefit from (possibly substantial) increases in the market value of recycled/recovered materials.

• A comprehensive and integrated approach (one that is not dominated by a large and needy, expensive and inflexible, potentially oversized facility) would enable Frederick County to add, expand or otherwise adapt and change in response to new (and smaller scale) technologies, new waste management practices, new regulations and legislative changes from Annapolis or Washington, changes in our wastestream, changes in the markets for recovered materials, and more…

• Local resource recovery (and maximum resource recovery) would generate substantially more local employment opportunities (the kind of jobs thatcan't be outsourced)…and increased local tax revenues that come with both local jobs and more local, private business (new or expanded).

Some real and potential value and benefits of maintaining flexibility and adaptability

• Local resource recovery (and maximum resource recovery) would generate substantially more local employment opportunities (the kind of jobs that can't be outsourced)…and increased local tax revenues that come with both local jobs and more local, private business (new or expanded).

• Retain the ability to continually evaluate and consider investing in improved, new and emerging technologies, many of which may be smaller scale, less expensive, and more environmentally-friendly. This even extends to some of the current options the county briefly considered and dismissed because they have not been sufficiently demonstrated and proven yet, such as:

- **Pyrolysis** is the thermal processing of waste using indirect heat in the absence of oxygen. Geoplasma project largest implementation of technology located in St Lucie Fla. Scheduled to start at 1,000 tons per day.
- **Gasification** is the thermal processing of waste using heat, pressure, and steam to convert materials directly into a gas.
- **Acid Hydrolysis** is the chemical decomposition of waste using acid and water to split chemical bonds.
- **Anaerobic digestion** is the bacterial breakdown of organic materials in the absence of oxygen.

NOTE: While we should not make decisions in this basis today, it's worth mentioning that some of the emerging technologies may be able to utilize (or "mine") the waste (or resources) in our current landfill.

The ethics of shipping waste out of the county

"Shifting our waste burden to another community also raises ethical questions."

Some local solutions are necessary and/or best. But in many ways, solid waste management is most reasonably addressed on a a regional basis.

Examples:

- We are currently sending our to-be-recycled materials 100 miles round trip to the Elkridge MRF.
- The waste and recycling economy is part of regional and national, even international, markets.
- If the county builds its own MRF, we might very well want to accept (even pay for) recyclable materials collected and delivered from out of county.
- The language in various county documents assumes (for WTE) that we would import waste from outside to better utilize capacity.
- Well-managed, tightly-regulated, larger "mega-landfill" businesses are part of the overall solid waste environment and provide a transitional alternative to a new, local landfill (or, at least, buy us time)

SUMMARY

The Beck Report is the only detailed evaluation and comparison the county has performed since the beginning of this process.

The report was very limited in scope (as determined by the previous BOCC), and it's conclusion relied on a near best case scenario over a period of decades.

The county has steadily moved toward the expensive and risky WTE option, largely on the basis of the report, in spite of the fact that it only considered the options listed (in Table 1-1), and that even with many uncertain and overly "optimistic" assumptions in key areas (applied to a twenty-five year time period), this inflexible option was only marginally the "lowest cost option" of the narrow scope of alternatives evaluated at all.

Presented in Table 1-1 is a summary of the estimated total cost of disposal for the seven options outlined above during the period 2006 through 2031. Also presented in Table 1-1 is a summary of the net present value of the calculated total cost of disposal assuming a discount rate of five percent. It should be noted that in all seven cases, we have assumed that the County will continue to long-haul transfer from 2006-2011 while the facilities are being permitted, financed and constructed so the cost of all seven options is the same during that time period.

Table 1-1
Summary of Estimated Cost of Disposal(1)
($000)

Option	Nominal Cost	Net Present Value
Long-Haul	$1,002,600	$519,500
Long-Haul / Increased Fuel Costs	$1,268,800	$628,000
900 TPD Waste-to-Energy Facility / County Waste Only	$1,151,700	$599,600
900 TPD Waste-to-Energy Facility / Optimized Full Capacity	$1,146,400	$596,000
Regional 1,500 TPD Waste-to-Energy Facility	$960,100	$506,200
Compost Facility / Landfill	$1,065,300	$556,000
Compost Facility / Long-Haul	$1,126,300	$580,500

(1) See Section 5 for a discussion of the assumptions.

The information in Table 1-1 indicates that the lowest cost option, on a net present value basis, involves the construction of a regional 1,500 TPD waste-to-energy facility. The net present value of the cost of this option is calculated to be approximately $506,200,000.

The continued use of the long-haul transfer option is calculated to be the second most economical option assuming that the cost of long-haul transfer increases at the assumed rate of inflation. If, due to continued increases in the cost of diesel fuel, the cost of long-haul transfer were to increase at a rate which is twice the rate of inflation, the long-haul option would become the most expensive option as it is projected to increase from a net present value of approximately $519,500,000 to $628,000,000 under the assumed increase in fuel costs.

SUMMARY

In general, Frederick County has, to date, been **overly assured of the relative economic "certainties" of the WTE option**.

The county has not adequately evaluated and accounted for a sufficiently realistic and reasonable range of uncertainty with regard to many of the key variables and assumptions in the only model we have generated.

The economic competitiveness of WTE, and even its viability, relies on the relative accuracy of many assumptions. In no particular order, that includes assumptions about the county's population growth rate, average household waste generation rates, recycling and diversion rates, the nature of our wastestream over a span of decades, the costs of expensive new and tighter regulatory mandates, the ability to import waste (in addition to Carroll County), and more.

Conversely, the projected competitiveness of WTE also relies on the accuracy of many assumptions made (or factors not yet considered) about the short and long term cost of various alternatives, most of which have not been fairly evaluated. In no particular order, that includes the level of recycling or diversion that is attainable in Frederick County, the amount of time it would take to reach those levels, the value of recovered materials on the market, the percentage of the wastestream that is and will be recyclable (and have value in the marketplace), and more.

SUMMARY

As noted, there are numerous other serious concerns about WTE that are not addressed here, such as public health and environmental impacts, the affect on property values, our contribution to greenhouse gases (and climate change), etc. We have not yet addressed some of those concerns adequately.

Based on economic considerations alone, however, this is an initial attempt to encourage a broader discussion about, and more detailed evaluation of, the genuine uncertainties, possibilities and probabilities that make the WTE option a much larger risk than has frequently been described.

Part of advancing that process is by presenting an economically competitive and viable alternative. This report attempts to suggest that:

1) Increasing recycling, resource recovery, composting and other diversion beyond and sooner than the current county goal (and assumptions),

2) Utilizing the same landfill capacity that is planned with the WTE proposal, and

3) Out of county hauling of a decreasing volume of "residuals."

...offers a realistic and attainable alternative that is economically competitive, immediately and in the long run, in addition to offering many other real, distinct and significant advantages and benefits.

SUMMARY

Clearly, most of the factors that could affect the cost and risk of the WTE option would INCREASE the cost (remember that, in addition to using the favorable Beck numbers, I did not factor into the cost ANY of the items that were used as examples of potentially higher costs and risks, even much higher costs).

Conversely, most of the factors that could affect the cost and risk of the alternative concept presented would DECREASE the cost (remember that, for instance, I have not included any revenue for recovered materials above the cost of operating the Resource Recover Park).

In any case, all of the assumptions and numbers on both sides of the equation are subject to debate and discussion should be closely scrutinized. If nothing else, this basic analysis shows there are other (non-WTE) strategies that are, or may be, less expensive, more flexible and far less risky.

There has been a sense of urgency associated with this issue. And there can be no doubt that it is a serious issue and an immediate challenge before us. But it is far more important to make the right decision than a rushed decision. Even though our current landfill has limited space, our options suggest we have the ability to take more time, without significant economic consequences (and, perhaps, as I believe, with significant economic benefits).

SUMMARY

There is no pretension that the level of information and analysis herein is sufficient to serve as the basis of any county decision about our solid waste options, except for one:

A decision to perform a comprehensive, professional Risk and Uncertainty Assessment of WTE that embraces accepted best practices, and to conduct a professional review of multiple alternatives to Waste to Energy (such as the concept here…and others).

To date, Frederick County has oversold the advantages and certainty of the WTE option, and under-evaluated and under-appreciated the economic uncertainty and risk.

Frederick County has not sufficiently explored a number of other, potentially competitive options, and we have greatly under-appreciated the value of maintaining flexibility and options in a rapidly changing environment.

Without including non-economic concerns here, simply given the size of the investment, the potential for significant additional costs, the length of the time commitment, and a more complete consideration of the risks, we should step back, take a closer and broader and better look at WTE and certain alternative options.

The alternative concept herein also contains a few assumptions that should – and I hope will be – subject to discussion.

SUMMARY

One is that we will be able to haul a portion of our waste out of the county for significantly longer than is projected in the current WTE plan (no more long hauling after the facility begins operation).

From: “Long-term Solid Waste Initiatives”
Subtitled “Consideration of Regional WTE Concept for Frederick & Carroll Counties” (October 30, 2007) and presented by: Frederick County Division of Utilities and Solid Waste Management (DUSWM):

“*The long haul transfer of waste to other jurisdictions and reliance on other states’ acceptance of these wastes is not considered a sustainable solution in the management of Frederick County’s solid waste.*”

It is clear that long haul transfer of a portion of our solid waste (even a significantly diminishing portion) is not an ideal solution to our short term and/or long term waste management challenges.

But, then, for a number and variety of reasons, it is reasonable to say that a large Waste-to-Energy incinerator is not an ideal solution to our short term and/or long term waste management challenges, either.

Certainly, recognizing the full range of possible costs for this option should be part of the evaluation. But that should also include a fresh look at the relative cost and benefit of constructing the necessary infrastructure to utilize rail for this purpose.

SUMMARY

The other assumption is that the county can reach a higher level of recycling and diversion, in a shorter time period, than is our current goal (to take 16 years to go from 36% to 60%). Clearly, I believe we can, and I think there is ample evidence and information out there to suggest it is a realistic and reasonable goal for our community.

But it is quite possible – even likely – that the alternative concept proposed here (or others) **would be economically competitive even if it takes longer to reach those levels of recycling and diversion**.

There is more to evaluate and compare, of course. But I encourage the county commissioners to **genuinely consider the real value of viable and cost-competitive alternatives that preserve our flexibility**. We risk more than some appreciate by selecting a path that heads backwards, and utterly fails to appreciate and account for the rapid changes - even major paradigm shifts - we are already seeing in the world around us today.

We could be the last community - or one of the last - in the entire country to choose Waste-to-Energy incineration, permanently converting limited resources to ash (because our plan does not include only incinerating what can not be recycled or composted). Or we can show real leadership, and become one of a growing number of communities that will serve as working models of a better, more flexible and adaptable, more environmentally-friendly, and less economically-risky path.

A few quotes…

"The financial liabilities of an incinerator are unparalleled by any other discard management system. These liabilities will extend far beyond the term of this board of commissioners and contain a host of unknown variables that create a higher risk for present and future taxpayers. No commissioner should seek to leave a legacy of financial uncertainty and debt obligation."

Kate Bailey
Eco-Cycle International Program Developer
Boulder, CO

"Being Less Bad Is Not Being Good"

"Negligence is knowing better and doing it anyway."

- William McDonough

"What we do: We bring together the best thinking to inspire transformation of our community. Our mission is to transform our community from good to great by inspiring action. Why? Because a great community is everyone's business."

Deborah Nankivell
CEO, Fresno Business Council


reduce, reuse, recycle & compost more
Zero Waste
TRASH
COMPOSTABLES
MIXED RECYCLABLES
TRASH
COMPOSTABLES
RECYCLABLES